

FIG.-1

Target DNA completely homologous

FIG._2A

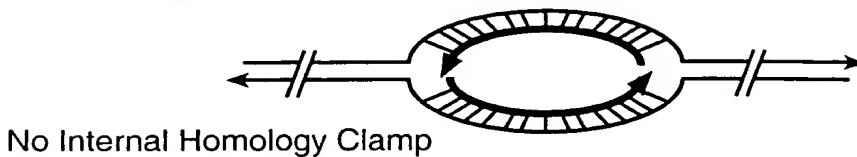


FIG._2B

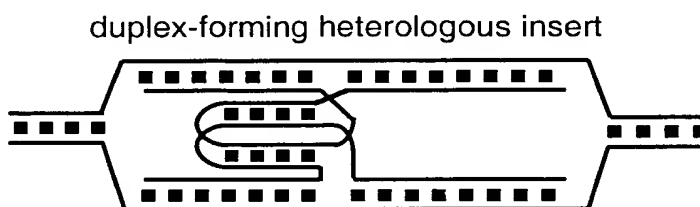


FIG._2C

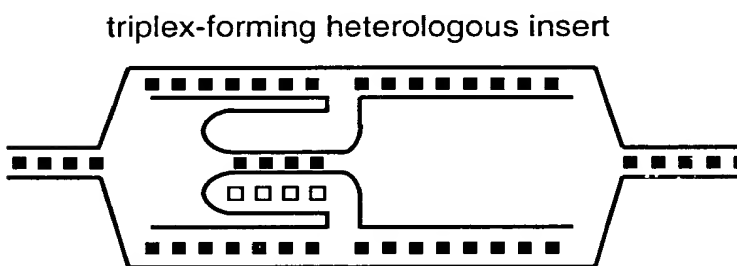
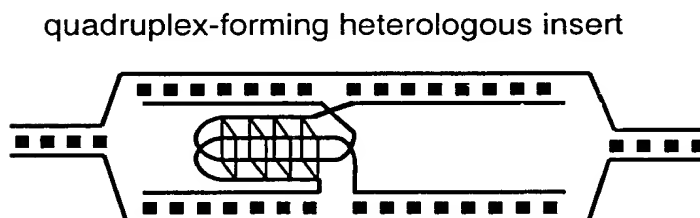


FIG._2D



heterologous insert which forms triplex with secondary probe

FIG._2E

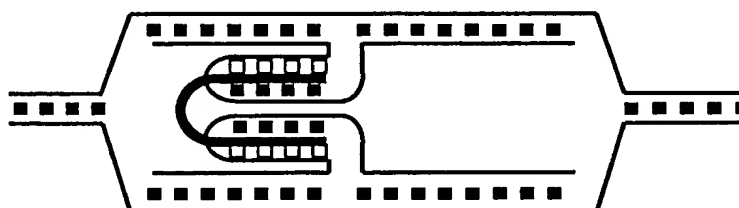
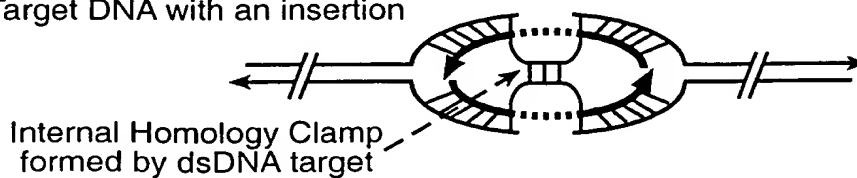


FIG._2F

Target DNA with an insertion



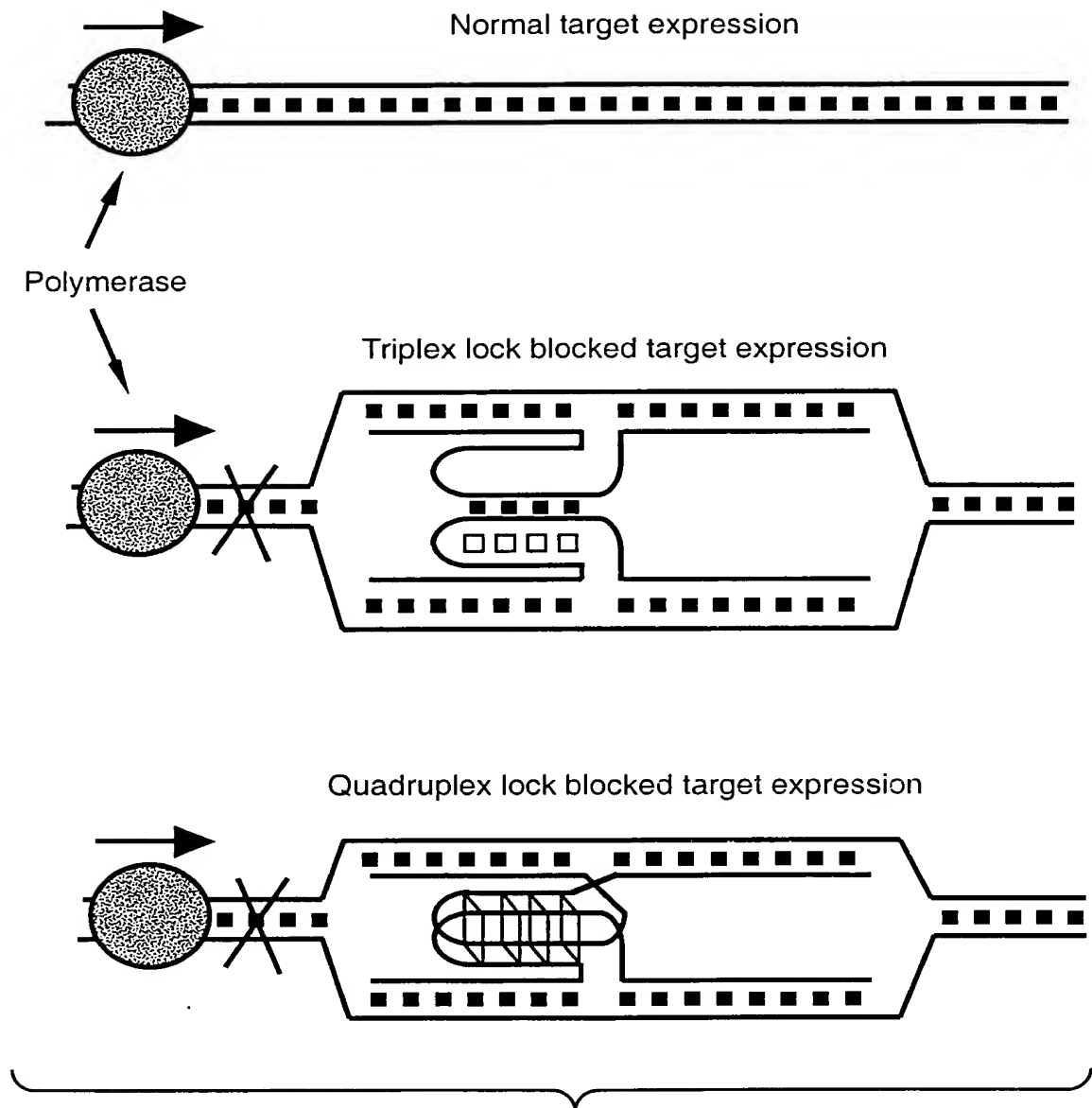
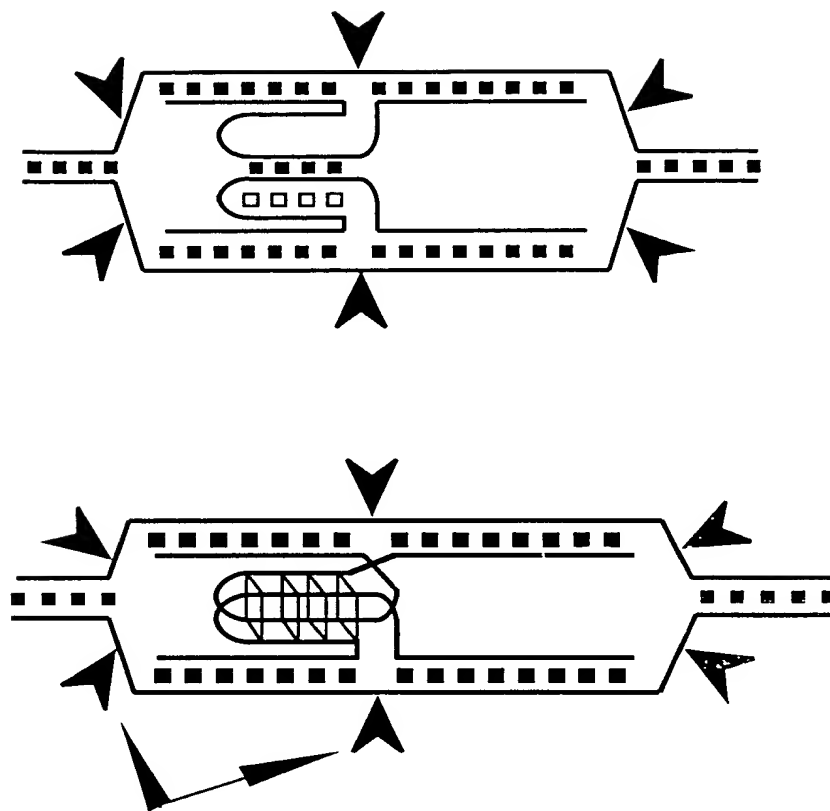


FIG._3



Hybrid recognition by
nucleic acid repair,
nucleic acid recombination,
and resolution enzymes

FIG._4

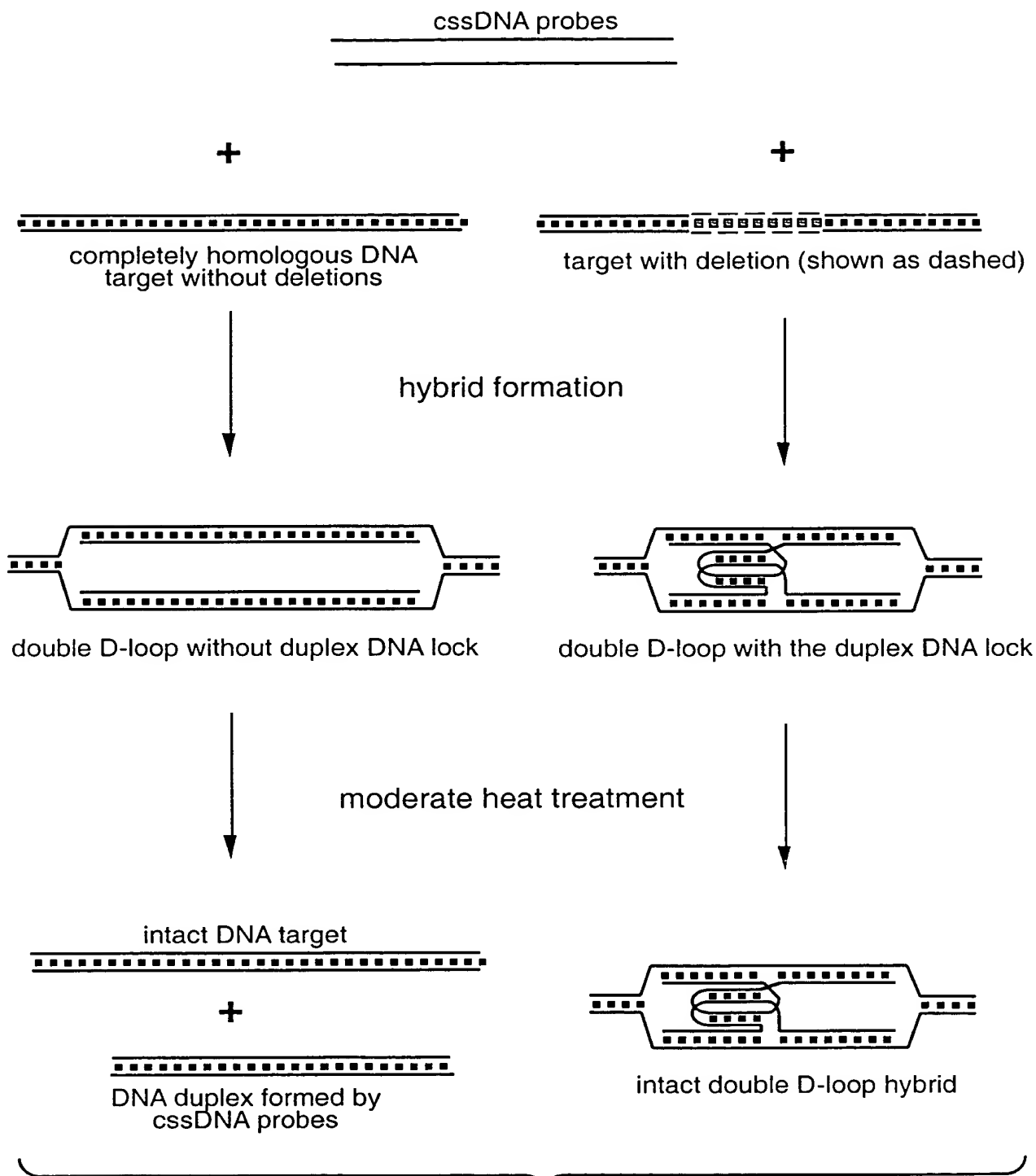


FIG._5



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FIG._6

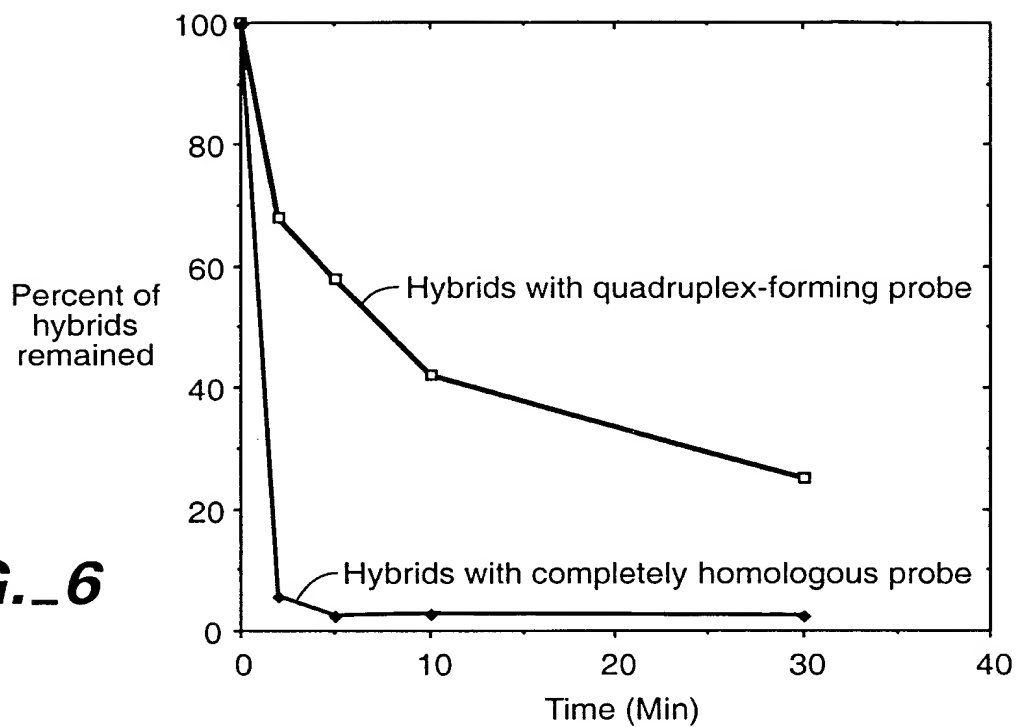
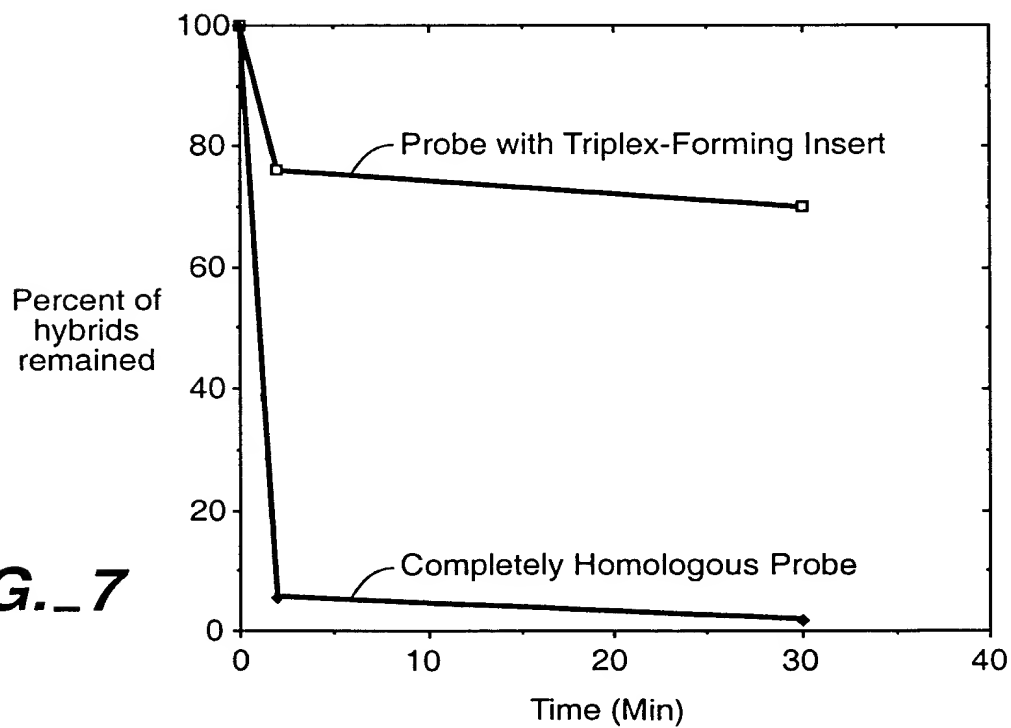


FIG._7



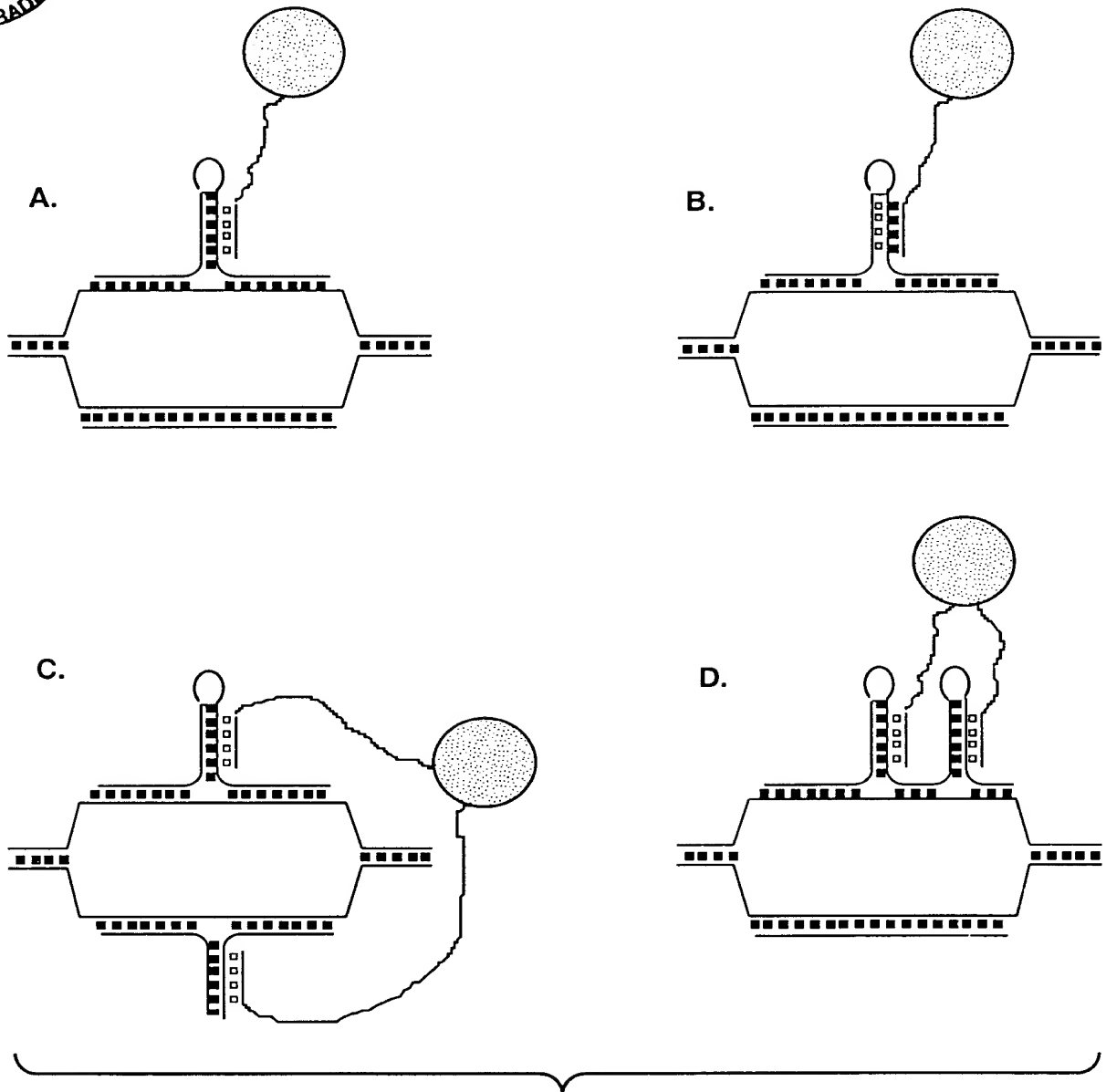


FIG._8A

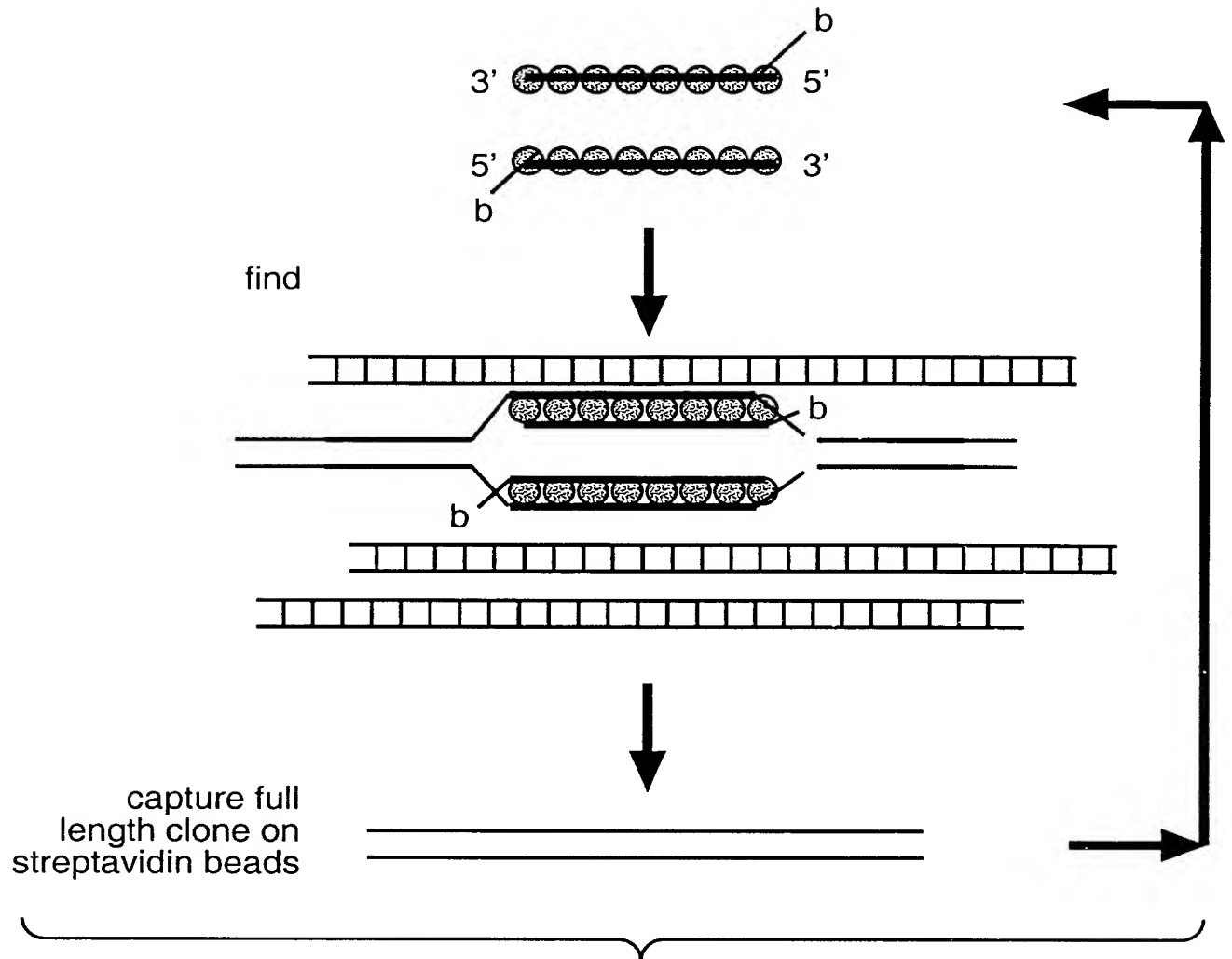
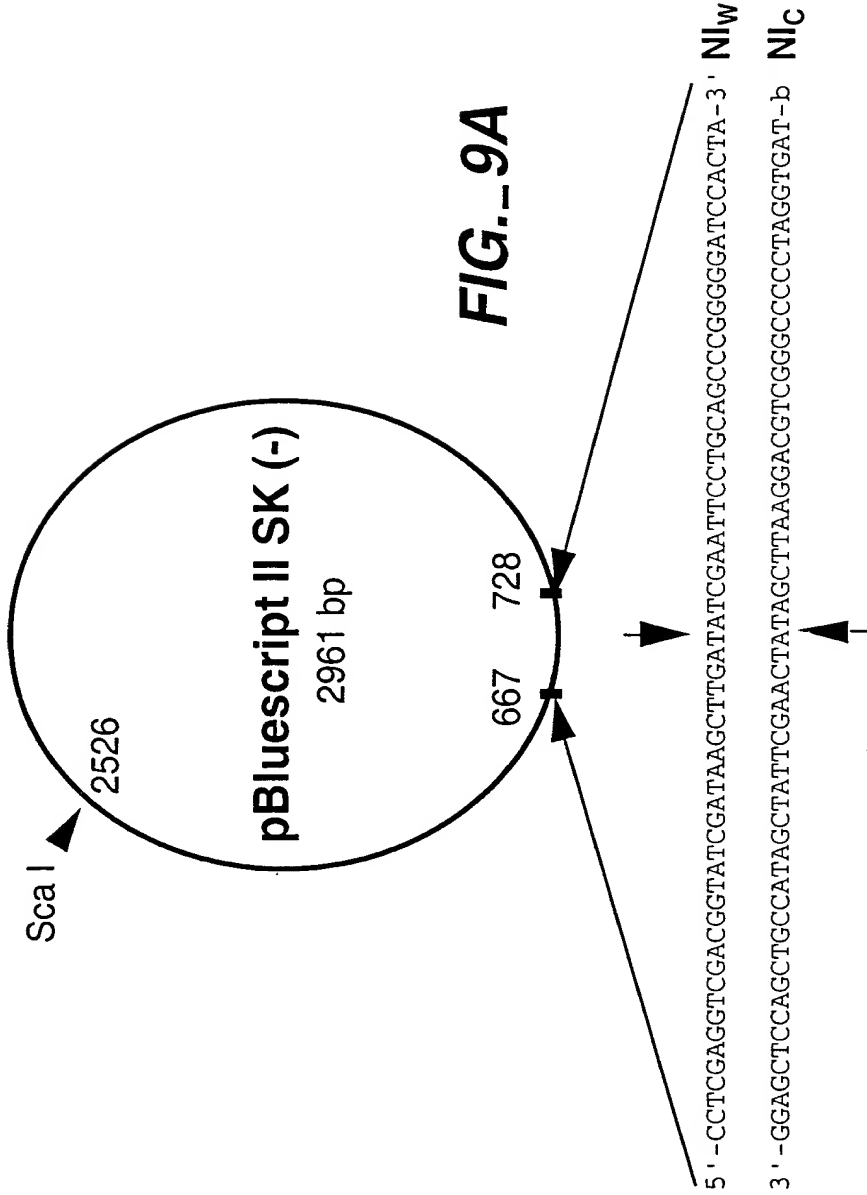


FIG. 8B



5'-CCTCGAGGTCGACGGTATCGATAAGCTTGAT**TGTGTGTGTGTGTGTGTATCGAATTCCTGCAGCCCCGGGGGATCCACTA-3'** **ZI_W**
 3'-GGAGCTCCAGCTGCCATAGCTATTTCGAACTA**ACACACACACACACACACATAGCTTAAGGACGTCGGGCCCCCTAGGTGAT-b** **ZI_C**

FIG._9B

5'-CCTCGAGGTCGACGGTATCGATAAGCTTGAT**TTGGGGTTGGGGTTATCGAATTCCTGCAGCCCCGGGGGATCCACTA-3'** **QI_W**
 3'-GGAGCTCCAGCTGCCATAGCTATTTCGAACTA**TTGGGGTTGGGGTTTAGCTTAAGGACGTCGGGCCCCCTAGGTGAT-b** **QI_C**

FIG._9C

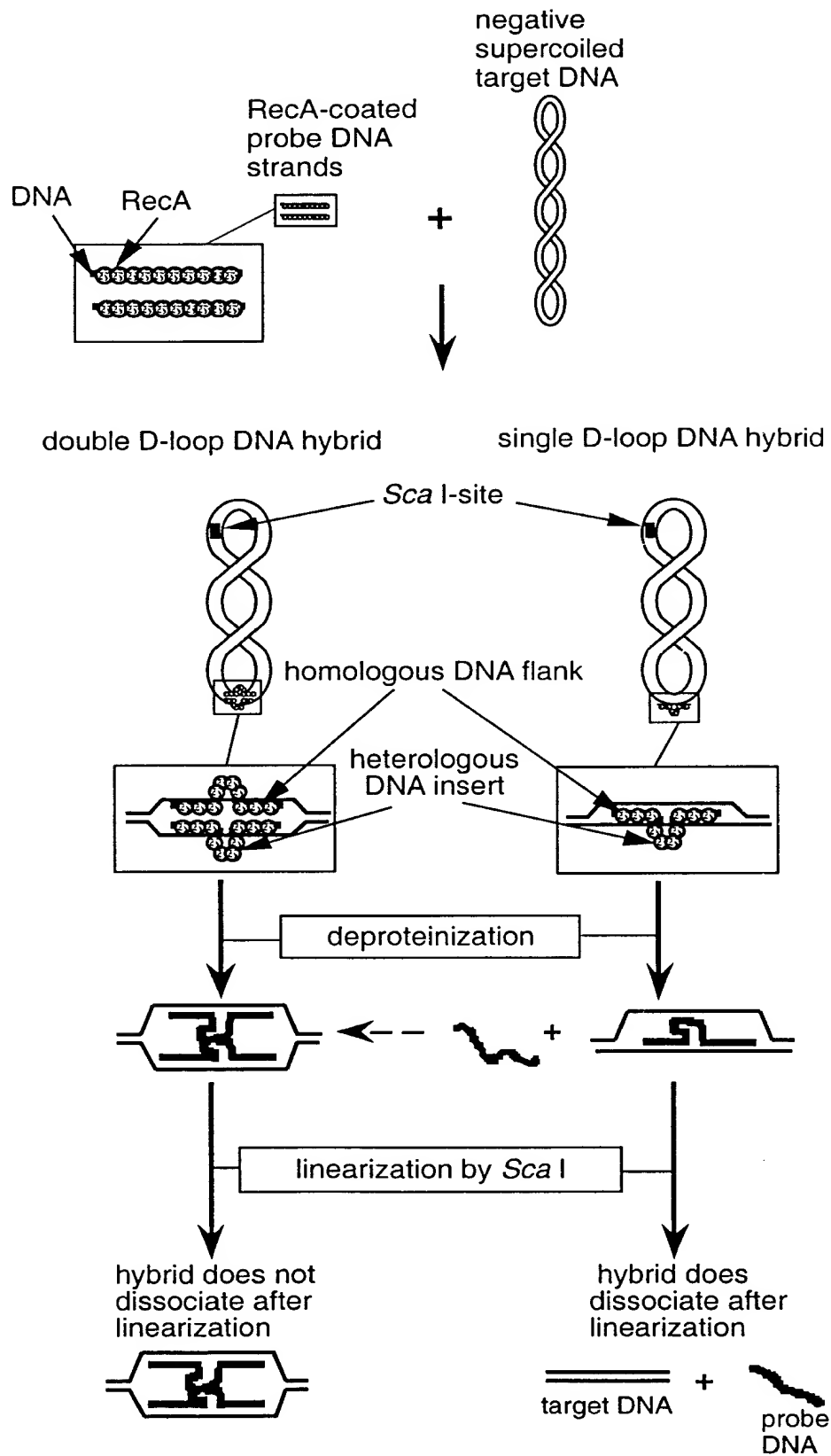


FIG._10

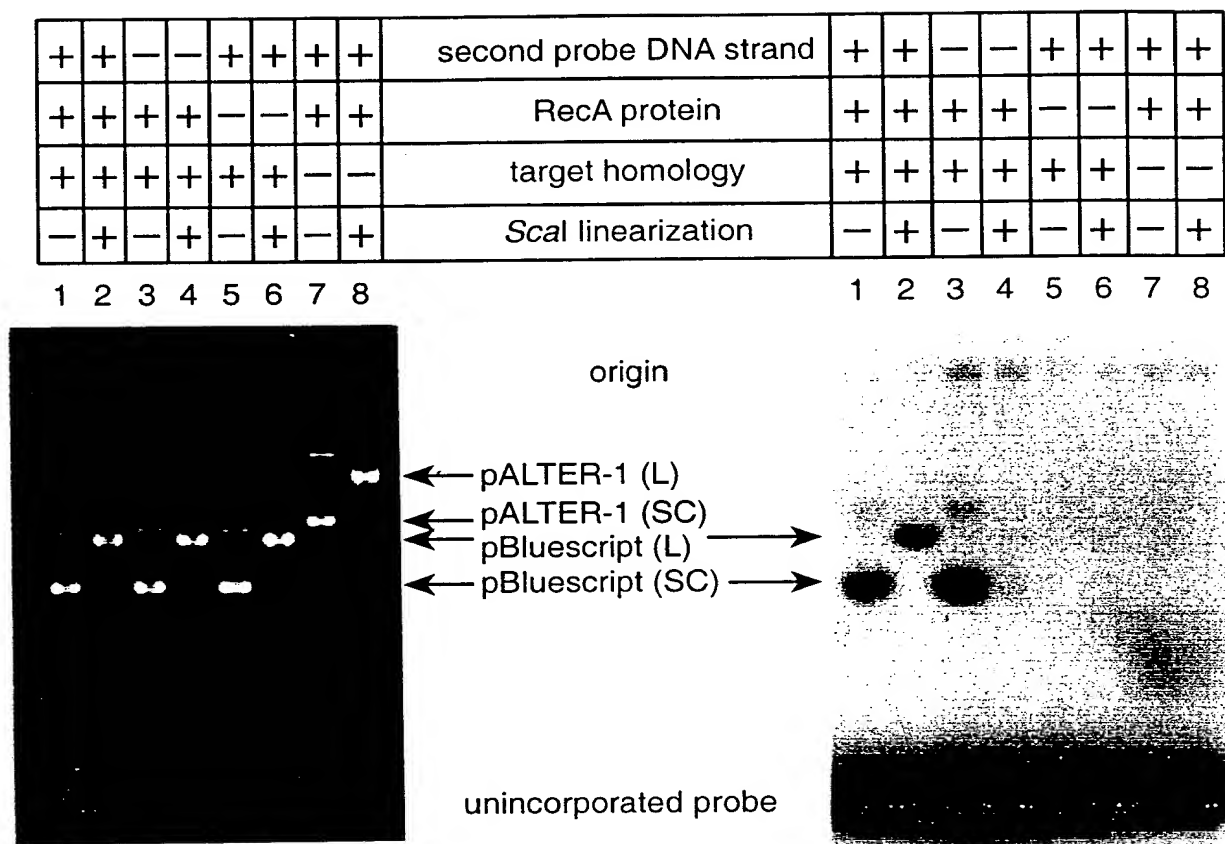


FIG._11

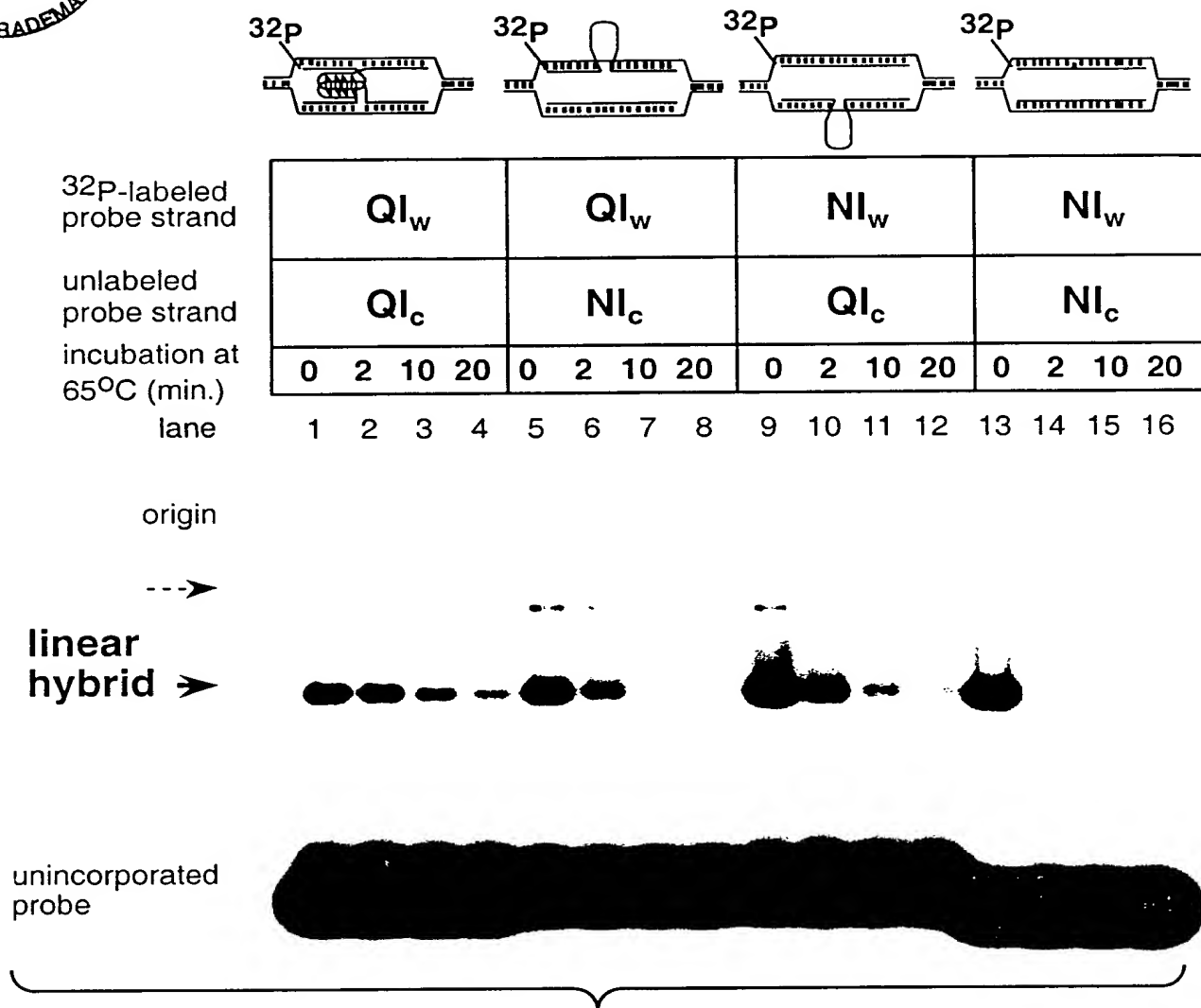


FIG. 12A

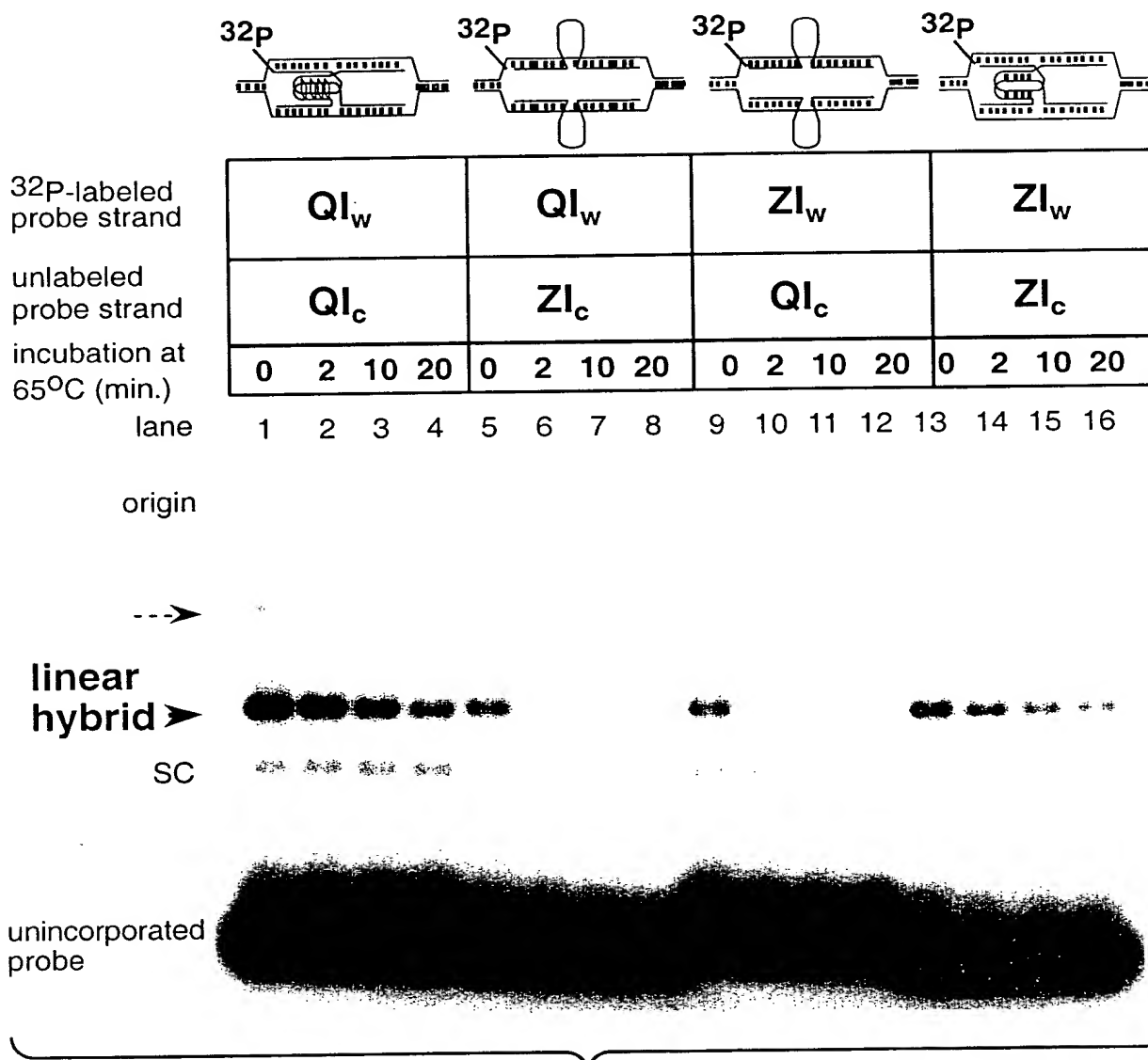
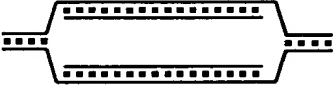
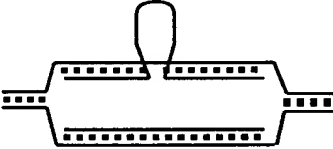
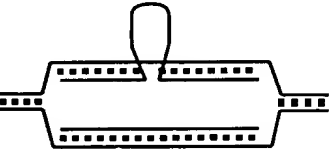
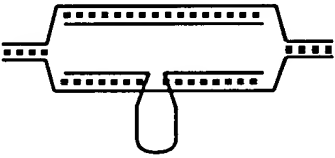
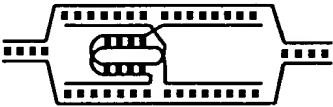
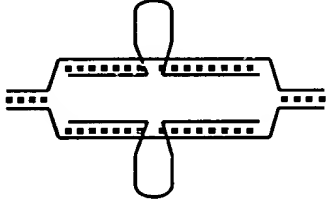
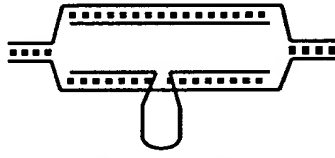
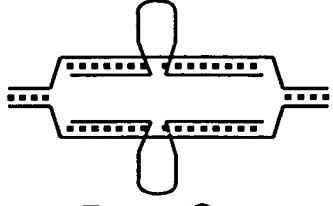
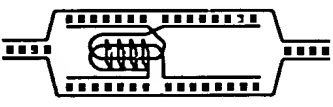


FIG._12B

<div> top probe strand bottom probe strand </div>		NI_w	ZI_w	QI_w
NI_c		 $\tau_{1/2} < 2$	 $\tau_{1/2} < 2$	 $\tau_{1/2} < 2$
ZI_c		 $\tau_{1/2} < 2$	 $10 \leq \tau_{1/2} < 20$	 $\tau_{1/2} < 2$
QI_c		 $\tau_{1/2} < 2$	 $\tau_{1/2} < 2$	 $5 \leq \tau_{1/2} < 10$

NI = No DNA Insert

ZI = Z-DNA forming Insert

QI = Quadruplex-DNA forming Insert

w = Watson DNA strand

c = Crick DNA strand

$\tau_{1/2}$ = double D-loop DNA hybrid apparent half-life time (min.)

FIG. 13

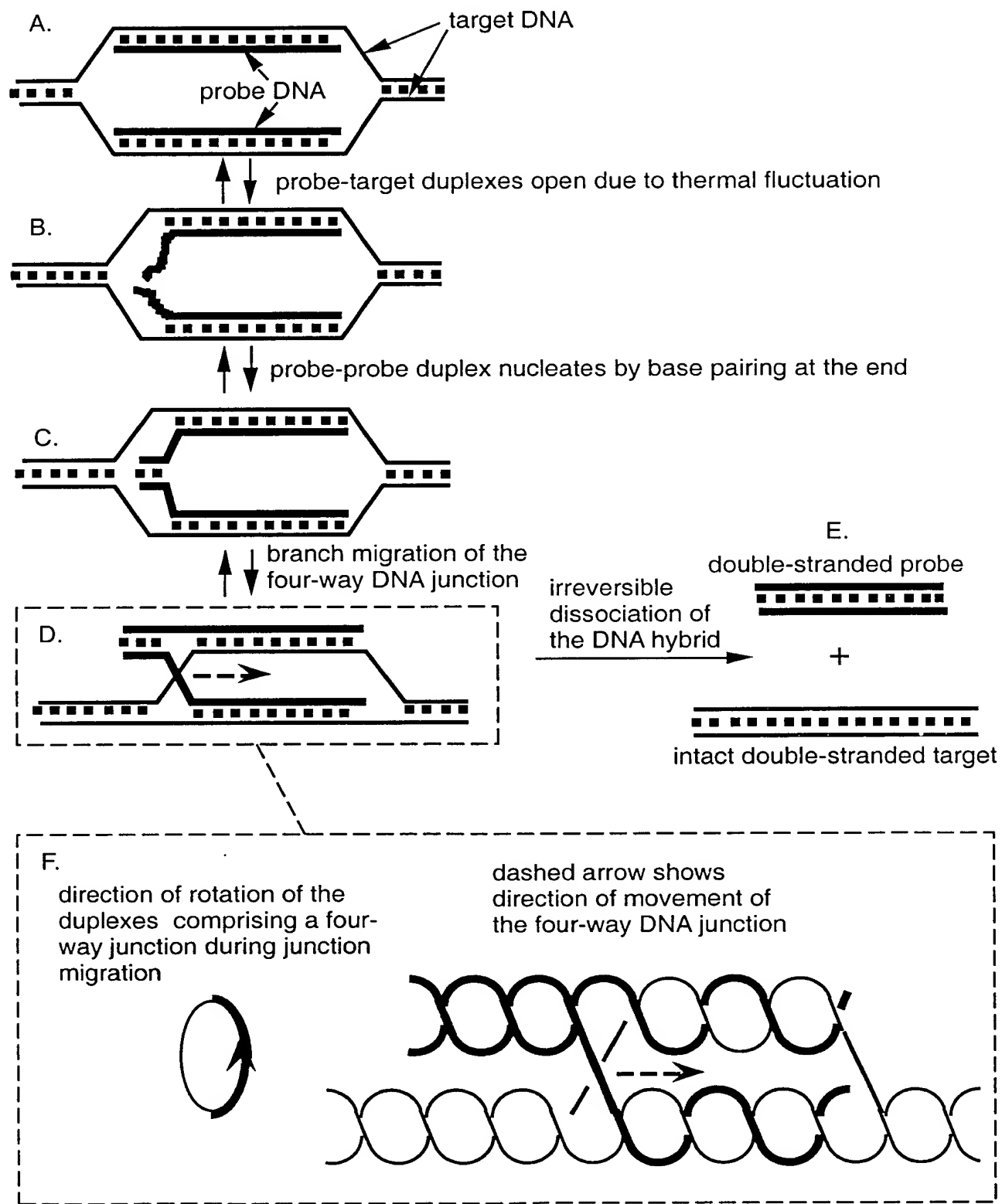


FIG. 14

FIG._15A

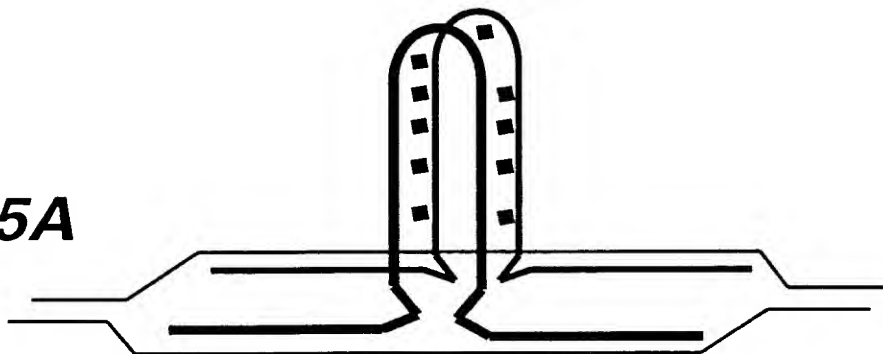


FIG._15B

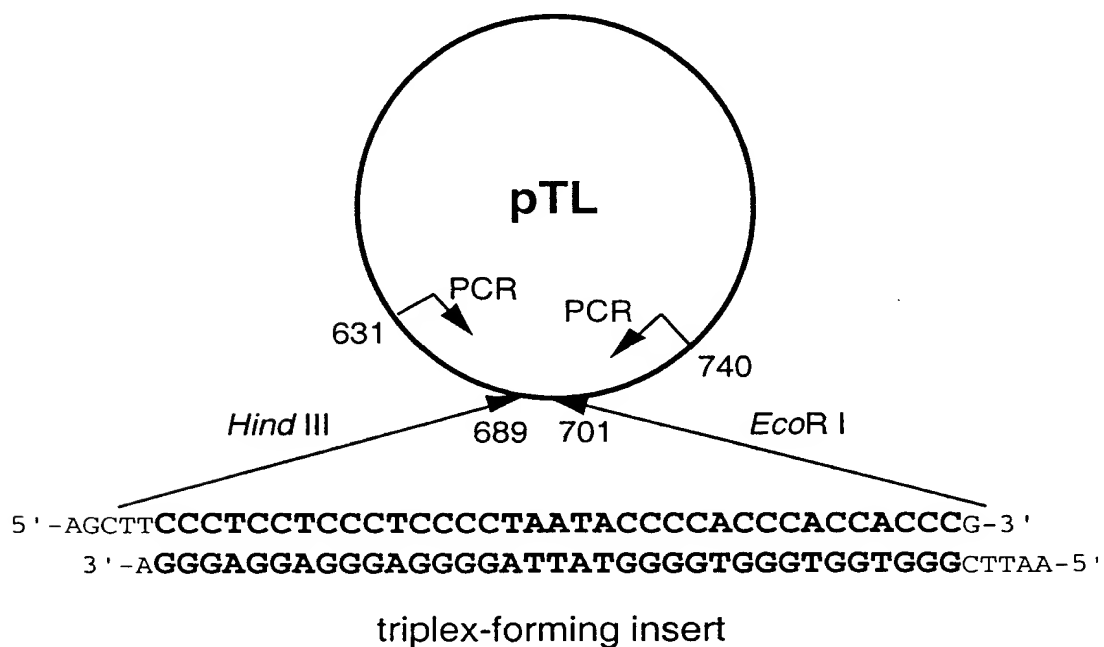
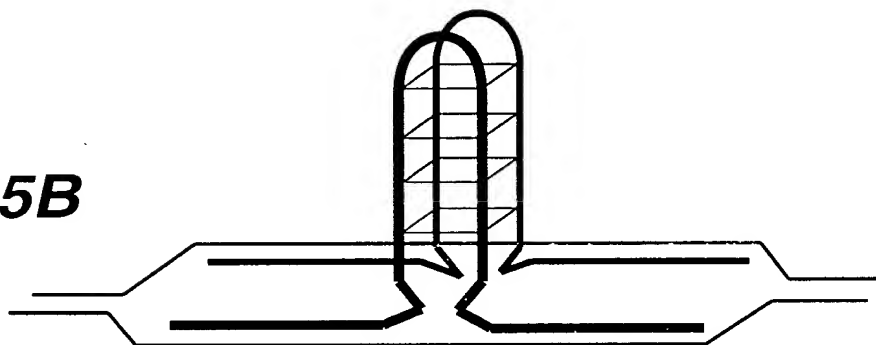


FIG._16

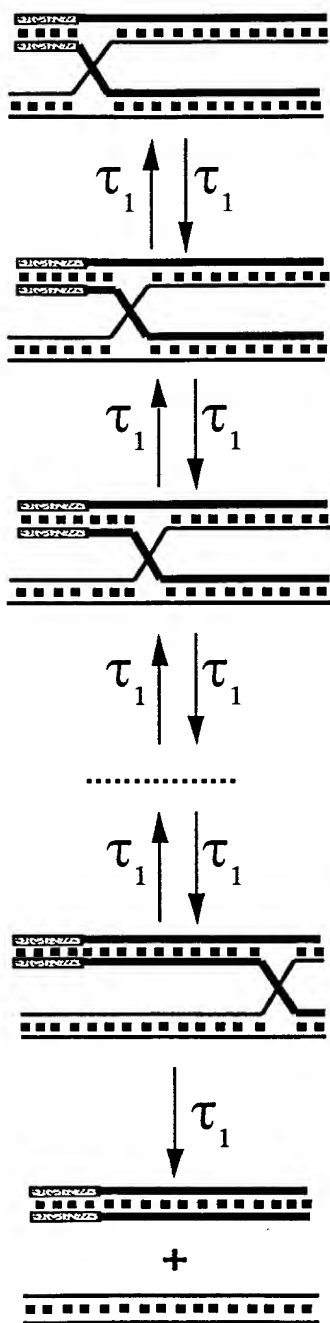


FIG._17A

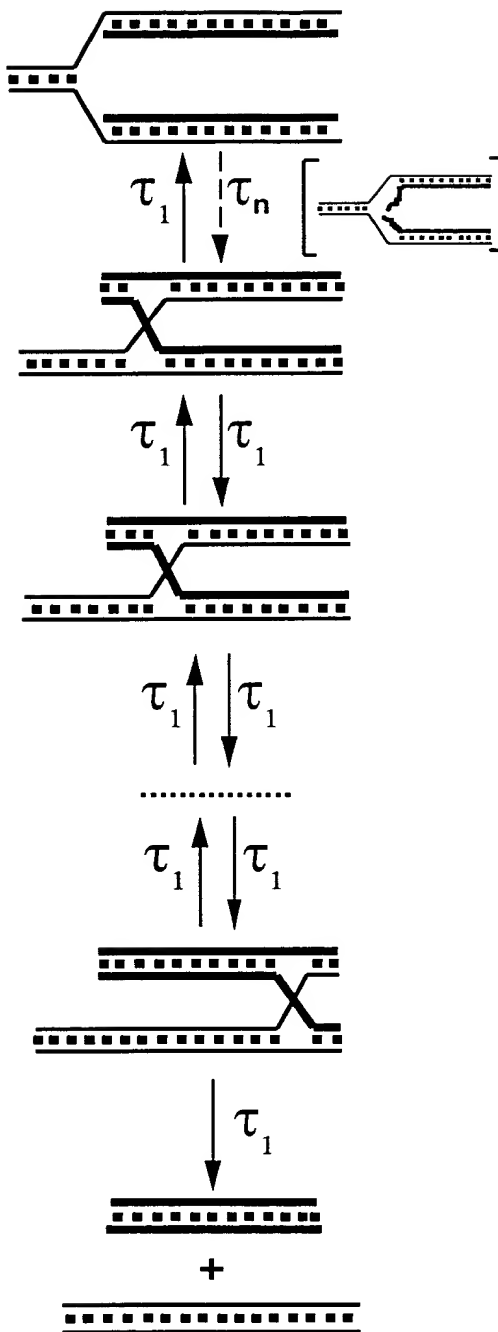


FIG._17B

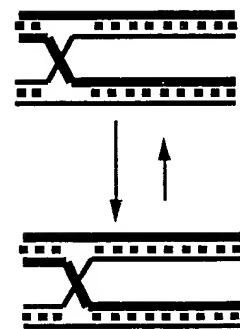
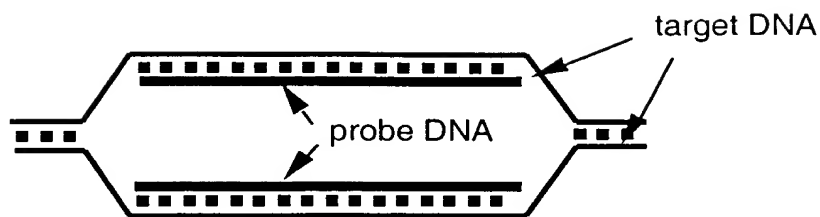
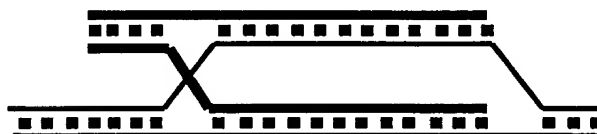


FIG._17C

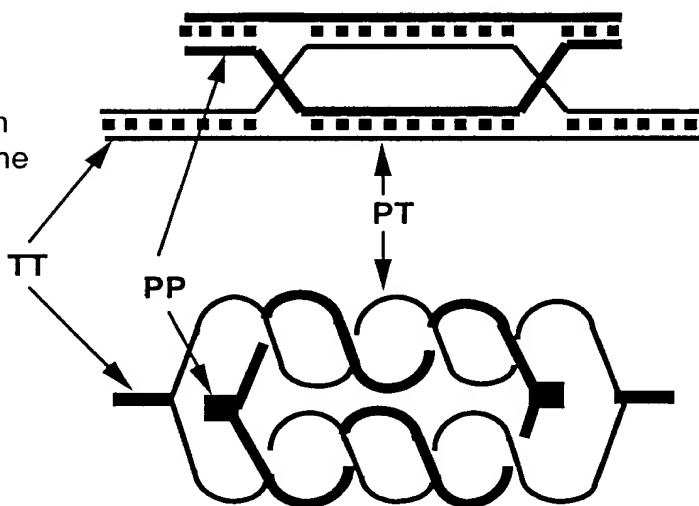
A: Double D-loop DNA without nucleation of the probe-probe duplex



B: Double D-loop DNA with single nucleation (sn) of the probe-probe duplex



C: Double D-loop DNA with double nucleation (dn) of the probe-probe duplex



TT = target-target DNA duplex

PP = probe-probe DNA duplex

PT = probe-target DNA duplex

D: Double D-loop DNA with irreversible single nucleation of the probe-probe duplex at one end

probe DNA sequence
heterologous to target DNA

probe DNA sequence
homologous to target DNA



FIG. 18

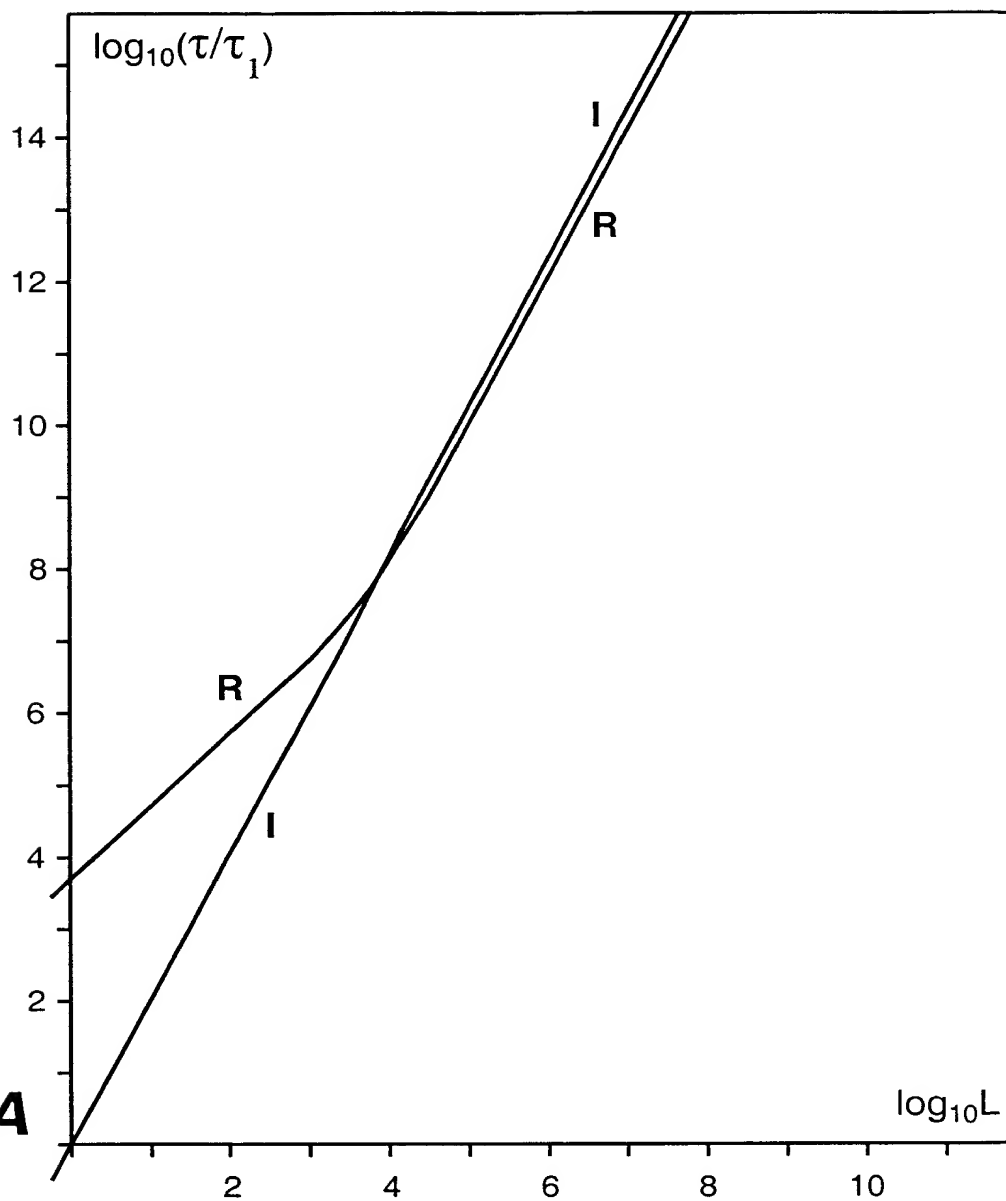


FIG. 19A

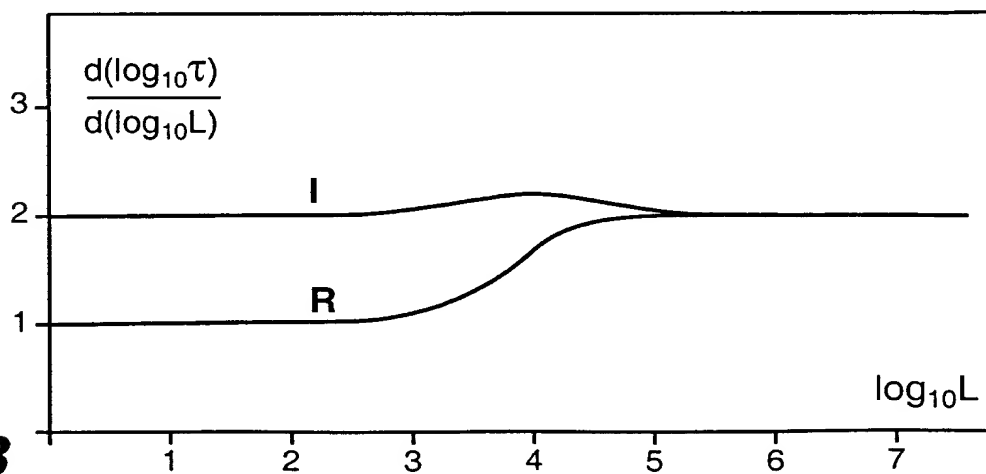


FIG. 19B

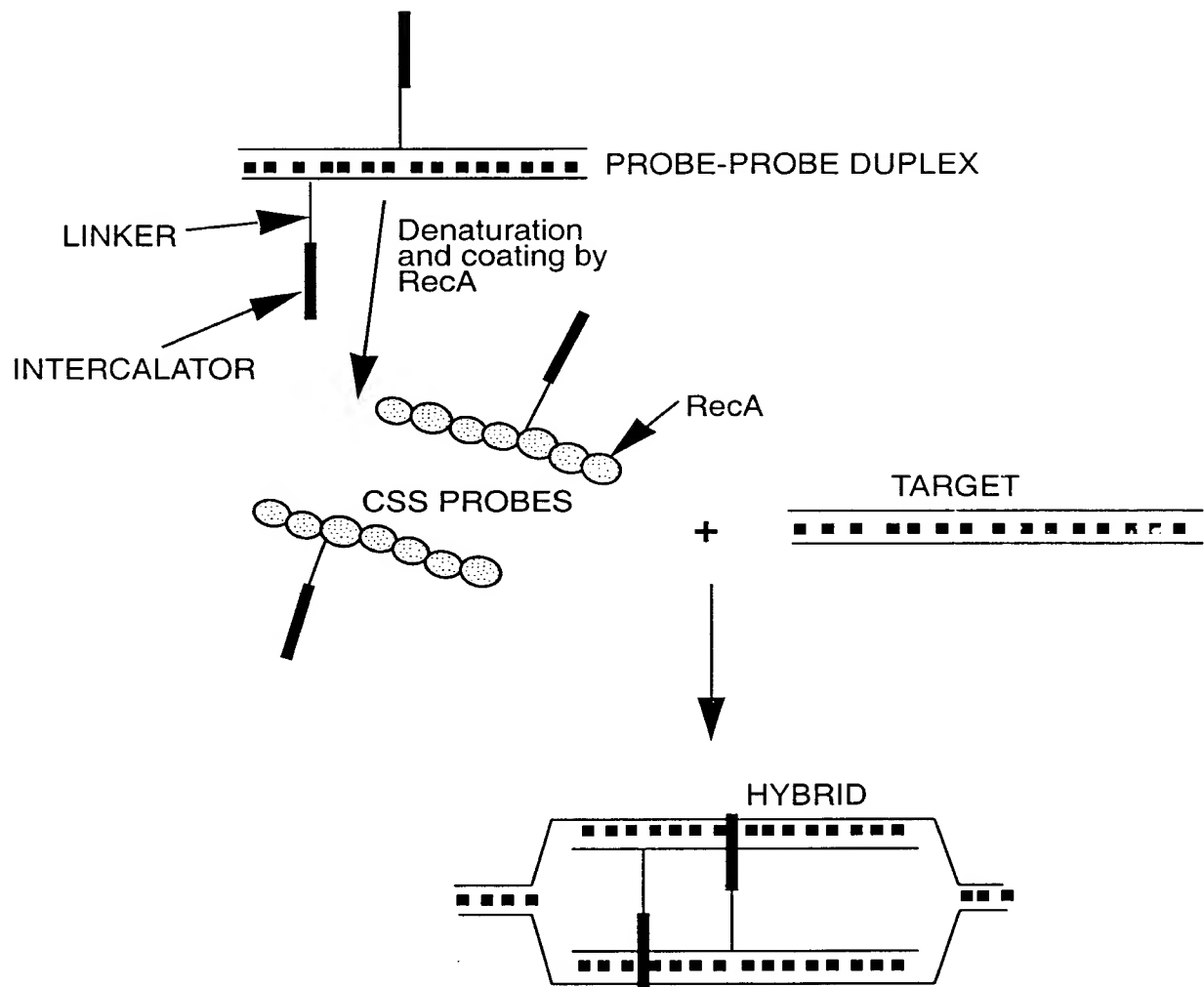


FIG._20